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ABSTRACT OF THE DISCLOSURE

Methods and associated systems for providing secured data transmission over a data network are disclosed. Security association updates may be provided in a load-balanced system.

5 Before encryption, the system may calculate values for header fields that need to be updated as a result of an encryption process. Encrypted packets may be decrypted by a parallel decryption system. After decryption, the system may calculates value for fields in the header information that  
10 need to be updated as a result of the decryption process.

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